

# BIOSECURITY GUIDE

## For Poultry and Bird Owners



**LOOK**  
for Signs.



**REPORT**  
Sick Birds.



**PRACTICE**  
Backyard Biosecurity.



United States Department of Agriculture  
Animal and Plant Health Inspection Service

Program Aid No. 1885 Issued August 2006

# BIOSECURITY GUIDE

## For Poultry and Bird Owners

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*August 2006*

This guide was designed to provide useful information on biosecurity for poultry and bird owners. The United States works very hard to prevent infectious poultry diseases such as high-pathogenicity avian influenza and exotic Newcastle disease from being introduced into the country. To accomplish this, the U.S. Department of Agriculture (USDA) requires that all imported birds (poultry, pet birds, birds exhibited at zoos, and ratites) except those from Canada be quarantined and tested for the viruses that cause these two diseases before entering the country. USDA works cooperatively with State animal-health officials and the poultry industry to conduct surveillance of breeding flocks, live-bird markets, livestock auctions, poultry dealers, small-bird sales, fairs and shows, and backyard poultry. In addition to international import restrictions, veterinarians from USDA's Animal and Plant Health Inspection Service (APHIS) and individual States specifically trained to diagnose foreign animal diseases regularly conduct field investigations of suspicious disease conditions. University personnel, State animal-health officials, USDA-accredited veterinarians, and members of industry all help in this surveillance work.

Since 2004, APHIS has been conducting an extensive outreach and education program called Biosecurity For the Birds. The program reaches out to backyard poultry producers and pet-bird owners to educate them about the signs of infectious poultry diseases, the need to practice biosecurity, and the importance of reporting sick or dead birds. In fact, APHIS has a toll-free number (1-866-536-7593) to report sick or dying birds.

This Biosecurity Guide is part of our outreach program, and I encourage you to look at the other materials that are also available, including an excellent DVD/video on practicing biosecurity. These materials are free and can be found on our Web site at <<http://www.aphis.usda.gov/vs>>.

— **John Clifford, D.V.M.**  
**Deputy Administrator for Veterinary Services**  
 USDA-APHIS, Washington, DC

SECTION ONE

# BIOSECURITY

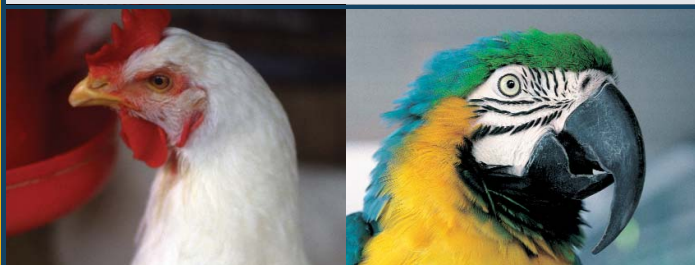
**BIOSECURITY GUIDE**  
For Poultry and Bird Owners

## Biosecurity: The Key to Keeping Your Birds Healthy

If you deal directly with poultry or pet birds, you have the responsibility to protect them against disease. By practicing biosecurity precautions, you can reduce the risk of disease-causing germs' going to or coming from your farm or home. Understanding the importance of biosecurity can help you take the necessary precautions to avoid spreading disease among your poultry and livestock.

In this section, you will find information about

- Biosecurity,
- The importance of biosecurity, and
- Economic impacts of disease outbreaks.



As a bird owner, keeping your birds healthy is a top priority.

### What Is Biosecurity?

Biosecurity means doing everything you can to keep diseases out of your flock. "Bio" refers to life, and "security" indicates protection. Biosecurity is the key to keeping your poultry healthy. It is what you do to reduce the chances of an infectious disease being carried to your farm, your poultry yard, your aviary, or your pet birds, by people, animals, equipment, or vehicles, either accidentally or on purpose.

#### Biosecurity is

- Using commonsense practices to protect your poultry and birds from all types of infectious agents—viral, bacterial, fungal, or parasitic;
- Doing everything possible to protect your birds from infectious diseases like exotic Newcastle disease (END) and avian influenza (AI); and
- Preventing disease-causing germs or microbes from entering your premises.

### Why Biosecurity Is Important

"Biosecurity" may not be a common household word. But, for poultry and bird owners it can spell the difference between health and disease. Practicing biosecurity can help keep disease away from your farm, and keep your birds healthy; healthy birds produce better, and increase your profits. Biosecurity measures are important for you as a poultry owner, for your neighbors, and for the U.S. poultry industry.

Biosecurity measures decrease the risk for

- Diseases such as END and AI on poultry farms;
- Loss of export markets, public concern, and cancellation of poultry shows, auctions, fairs, and exhibits as a result of disease outbreaks; and
- Quarantines resulting in financial losses due to disease outbreaks.

### Why Be Concerned?

#### Economic Impact of a Major Disease Outbreak

Diseases such as high-pathogenicity avian influenza (HPAI) and END can strike poultry quickly and without any warning signs of infection and cause major economic losses. So it is important for you as an individual bird owner, as well as for the U.S. poultry industry, to be alert to this disease threat.

In 2004, the value of the U.S. poultry industry was \$29 billion. Therefore, a major outbreak of HPAI or END would be costly to poultry owners, consumers, and taxpayers. [See page 17 for information about HPAI and END.]

- To eradicate END during the 2002–03 outbreak in southern California and other Western States, more than 3.2 million birds were euthanized at a cost of more than \$170 million. That figure does not take into account the personal loss of pets, which cannot be measured in dollars and cents.
- An outbreak of HPAI occurred in 1983 through 1984 in the Northeastern United States and resulted in the destruction of more than 17 million birds at a cost of nearly \$65 million in today's dollars. This outbreak also caused retail egg prices to increase by more than 30 percent.

**Remember, you are the  
best protection your birds have.**

SECTION TWO

PRACTICING  
BIOSECURITY

**BIOSECURITY GUIDE**  
For Poultry and Bird Owners

# Steps to Disease Prevention

## Disease Prevention

As a bird owner, prevention is an important step that you can take in order to keep disease from reaching your premises. It is important to keep diseases away from your property. Good bird management and strict biosecurity precautions will protect your birds against most infectious diseases and keep them healthy. Biosecurity is also important for your neighbors, so you don't spread illness from your birds to theirs or bring home diseases from their birds after visiting. And finally, biosecurity is important so our country's poultry industry is not at risk.

## Biosecurity: Make It Your Daily Routine

Consistent biosecurity practices are the best way to prevent bird diseases like END and AI from spreading in the United States should we have an outbreak. These viruses can be carried to poultry in multiple ways—people, animals, equipment, or vehicles—either accidentally or on purpose, increasing the risk of healthy birds' becoming sick birds. By practicing biosecurity as highlighted in the six steps shown below, you are keeping your birds safe from potentially deadly diseases. Making biosecurity a part of your daily routine while caring for your birds will decrease the chance of END or AI showing up on your doorstep.

## How Biosecurity Can Prevent the Spread of Disease

### Proper biosecurity can prevent the spread of infection from

- **Humans** (hands, hair, clothing, footwear);
- **Vehicles** (contaminated vehicles and equipment);
- **Animals** (domestic and wild, including rodents);
- **Carcasses** (those that are improperly disposed of) and manure, litter, debris, and feathers; and
- **Flocks** (other people's backyard flocks, particularly if the birds are housed outside).

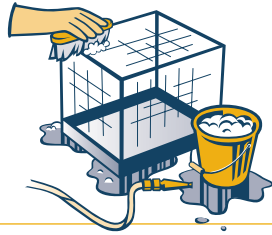
# Six Ways To Prevent Poultry Disease



## I. Keep your distance.

To keep your flock in the best of health, you need to isolate your birds from visitors and other birds. Here's how:

- Restrict access to your property and your birds.
- Consider fencing off the area where your birds are; this will form a barrier between "clean" and "dirty" areas. The clean area will be the area right around your birds.
- Allow only people who take care of your birds to come into contact with them; if visitors to your property want to see your birds, be sure they wash up first and clean their shoes.
- Keep clean boots for visitors to wear; *however*, if your visitors have birds of their own, **do not let them near your birds at all**.
- Game birds and migratory waterfowl should not have contact with your flock because they can carry germs and diseases. If your birds are outdoors, try to keep them in an enclosed area covered with a solid roof and wire-mesh or netted sides. Provide food and water in the covered area only.
- Be sure to have a rodent-control program.



## 2. Keep it clean.

You wouldn't think of tracking dirt and disease into your house, where they could infect your family. Don't do that to your birds either! Germs can be picked up on shoes and clothing and moved from one area to another. To keep your birds germ free:

- Keep a pair of shoes and a set of clothes to wear only when around your birds.
- Launder your clothes in a washer and dryer to kill germs.
- Wash your hands with soap, water, and a disinfectant before entering your bird area.
- Clean cages, feeders, and water on a daily basis.
- Clean and disinfect equipment that comes in contact with your birds or their droppings.
- Before disinfecting, remove all manure, litter, debris, and feathers and clean surfaces with soap and water.
- Wood surfaces cannot be disinfected as well as other surfaces. But if they are covered in polyurethane, they can be disinfected.
- Keep clutter out of the poultry areas so they are easy to clean.
- Properly dispose of dead birds by burial or incineration or take them to an approved landfill. Check on local ordinances for acceptable disposal methods.

## 3. Don't haul disease home.



Your car and truck tires, poultry cages, and equipment can all harbor "germs." To keep disease away from your premises, do the following:

- If you travel to a location where other birds are present, even to the feed store, be sure to clean and disinfect those items before you return home.
- If you take some of your birds to a fair or exhibition, separate them from the rest of your flock and watch them for at least 2 weeks after the event to ensure that they are free of disease.
- Separate new birds from your flock for at least **30 days** before putting them with the rest of your birds. Ensure that your new birds are tested for END and AI before you introduce them into your flock.
- To prevent disease, it is best not to mix young and old birds or birds from different species or different sources.

### Cleaning and Disinfecting

You must first **clean** tools, tires, car or truck wheel wells, etc., **before** you **disinfect** them. Cleaning means washing **all** mud, road dirt, and/or manure off of tires, tools, and/or garden equipment. If you try to disinfect and wash at the same time, you will only wash the disinfectant from the tools.

**Step 1:** Clean all the dirt and manure off the surface of the equipment. Laundry or dish soap works well.

**Step 2:** Wash down with a good disinfectant to kill poultry viruses (shoes can be brushed or scrubbed off and then sprayed with disinfectant).

Disinfectants come in a number of forms that you can purchase at most hardware or farm-supply stores or groceries.

### Examples of Disinfectants

**Household Bleach**—Mix 3/4 cup of bleach per gallon of water. If you don't have a measuring cup handy, you can mix 1 part bleach to 10 parts water. This formula works for shoes, buckets, shovels, and pitchforks. When you use bleach, make sure all dirt and manure have been cleaned off first.

**Spray Disinfectant**—Be sure the label says it kills bacteria and viruses. Sprays can work well on shoes and grooming equipment. Remove all manure and dirt before spraying.

**Waterless Hand Sanitizers**—They come in gels or hand wipes. These are good for use after visiting poultry. Be sure to work the cleaner all through your fingers and under the nails.

**Other Disinfectants**—Always mix and use according to the label. Two examples are One Stroke Environ® (available from Steris Corporation) and Tek-trol® (from Bio-Tek Industries). They are good choices for disinfecting car tires, and they also work well in footbaths.

### Making an Easy Footbath

#### You will need

1. A low plastic pan or bin, wide enough to fit an adult's foot and shallow enough to step into easily;
2. A plastic doormat (the "fake grass" mats work well);
3. A disinfectant that works well for most situations, such as Tek-trol or One Stroke Environ; and
4. Water.

Mix the disinfectant with water following label instructions. Put the doormat in the plastic pan. Add disinfectant so that the bottom of the "grass" is wet. Ask visitors to walk through the footbath, wiping their feet on the mat. The "grass" scrubs their shoes a bit as they wipe them, and applies the disinfectant. When the liquid starts to get dirty, empty it and put in new disinfectant.

Using "fake grass" in a footbath helps scrub shoes.

Mix disinfectant with water and cover the "grass" mat in the bottom of the pan.



### 4. Don't borrow disease from your neighbor.



Your birds' health is so important that you should never, by accident or design, share anything pertaining to them. For instance:

- Do not share birds, lawn and garden equipment, tools, or poultry supplies with your neighbors or other bird owners. If you do, clean and disinfect them before they reach your premises.
- Remember to clean and disinfect borrowed items before returning them.
- Never share items such as wooden pallets or cardboard egg cartons because they are porous and cannot be adequately cleaned and disinfected.

### 5. Know the warning signs of infectious bird diseases.



Early detection is important to prevent the spread of disease. The list below includes some of the signs that indicate something might be wrong with your birds. (For more information about AI and END, please see page 17.)

- Sudden increase in bird deaths in your flock;
- Diarrhea (greenish or watery);
- Drop in egg production; soft- or thin-shelled, misshapen eggs;
- Sneezing, gasping for air, nasal discharge, coughing;
- Lack of energy and loss of appetite;
- Swelling of tissues around eyes and in neck;
- Purple discoloration of the wattles, combs, and legs (AI); and
- Depression, muscular tremors, drooping wings, twisting of head and neck, and a lack of coordination or complete paralysis (END).



## 6. Report sick birds.



Early reporting is important to protecting the health of your birds! Report unusual signs of disease or unexpected deaths among your birds. Call your:

- Agricultural extension agent,
- Local veterinarian,
- The State Veterinarian or State animal/poultry diagnostic laboratory; or
- USDA–APHIS Veterinary Services office.

USDA operates a toll-free hotline (**1-866-536-7593**) with veterinarians to help you, and there is no charge for USDA veterinarians to work with you to conduct a disease investigation. USDA wants to test sick birds to make sure they do not have a serious poultry disease. (For specific contact numbers, please see the **contact information** section on page 29 of this handbook.)

An outbreak of a bird disease such as END and HPAI could not only harm or kill your birds but could spread so quickly that it could kill other neighboring birds.

### A Note About Vaccines

Vaccination is another tool to protect your birds against END. Your local agricultural extension office or feed stores that sell vaccines in your area can give vital information on the proper vaccines for your birds.

In the United States, vaccination against AI is not routine, and when it is used, it is mainly done within particular areas of the poultry industry. Because HPAI in poultry is considered exotic to the United States, eradication is the preferred response to an outbreak. Should vaccine be used against HPAI, it would be done as part of an eradication strategy under Federal Government direction.

AI vaccine will prevent clinical signs of disease in birds. And in an outbreak, vaccine can be used to protect healthy birds and to slow the spread of disease but not to prevent infection. Vaccination is used as one tool along with the other actions necessary to stop an HPAI outbreak (depopulation, cleaning and disinfection, movement control, surveillance, biosecurity, etc.).

## Biosecurity Tips for Pet-Bird Owners

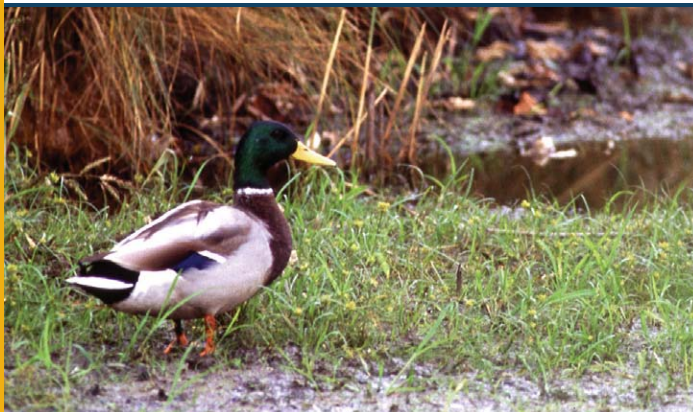
- When buying a pet bird, request certification from the seller that the bird was legally imported or came from U.S. stock and was healthy prior to shipment.
- Isolate new birds from your other birds for at least 30 days.
- Restrict access to your birds, especially from people who own birds that are housed outside.
- Keep your birds away from other birds.
- Clean and disinfect your clothing and shoes if you have been near other birds, such as at a bird club meeting or bird fair or at a venue with live poultry.
- Wash your hands thoroughly with soap, water, and a disinfectant before handling your birds.
- Keep cages, food and water clean on a daily basis.
- Remove feed from bags; place it in a clean, sealed container; and throw bags away.
- Do not borrow or share bird supplies. If you must, clean and disinfect the items before bringing them home.
- Know the warning signs of infectious bird diseases.
- If your bird shows unusual signs of disease or dies unexpectedly, call your avian veterinarian, local Cooperative Extension office, the State Veterinarian, the State animal diagnostic laboratory, or the USDA office, toll free, at 1-866-536-7593.



### Biosecurity Tips for Handling Wild Birds

Wild birds can carry several diseases, including AI. Observe wildlife from a distance, so you are protected from possible exposure to pathogens and you minimize disturbances to the animal. Here are some tips if you do come into contact with wild birds.

- Do not rub your eyes, eat, drink, or smoke until you have thoroughly washed your hands with soap and water.
- Do not pick up diseased or dead wild birds. Contact your State, tribal or Federal natural-resources agency if you find a sick or dead bird.
- Hunters should follow routine precautions when handling wild birds. These include (1) not handling or eating sick birds, (2) wearing disposable gloves when handling or cleaning wild birds, and (3) thoroughly washing knives, equipment, and surfaces that come in contact with wild birds.
- Hunters should not eat, drink, or smoke while handling animals.
- Wild birds and game should be thoroughly cooked before eating.



### SECTION THREE

# AI and END

## BIOSECURITY GUIDE For Poultry and Bird Owners

## Avian Influenza and Exotic Newcastle Disease

Today, raising poultry of all kinds is growing in popularity. You need caring, perseverance, and a good deal of knowledge to breed and raise birds, including knowledge of diseases that can potentially affect your flock.

In this section, you will find information about

- How a virus can spread,
- Avian influenza (AI),
- Exotic Newcastle disease (END), and
- The interconnectivity of the global marketplace and avian diseases.

### What Is Disease?

In common terms, disease is an abnormal condition that is the result of infection, basic weakness, or environmental stress. Disease prevents normal functioning. Its effects can range from reduced production and loss of energy to death. Disease can be infectious or noninfectious.

In poultry, there are four main classes of disease-causing agents: bacteria, viruses, fungi, and parasites. Viruses cause disease, such as AI ("bird flu") and END.

### How a Virus Spreads in the Environment

#### 1. Directly

- As a result of contact between a sick or infected bird and a healthy bird or between carrier birds and healthy birds;
- Contact with infected manure, litter, debris, or feathers; and
- Aerosol transmission through respiratory droplets.

#### 2. Indirectly

- Virus-bearing material picked up on shoes, clothing, hands, and vehicles is then carried to healthy birds.

#### 3. Other Vectors

- Wild animals, rodents, and insects.

## Avian Influenza (AI)

AI—also known as bird flu, fowl pest, or fowl plague—is a respiratory disease of birds. AI viruses can infect chickens, turkeys, pheasants, quail, ducks, geese, and guinea fowl, as well as a wide variety of other birds. Migratory waterfowl seem to be a natural reservoir/host for AI viruses. Type A influenza viruses are classified according to severity of illness they cause. AI viruses can be classified into low pathogenicity and high pathogenicity based on the severity of the illness they cause in birds.

**Low-Pathogenicity Avian Influenza (LPAI):** Most AI strains are classified as LPAI and cause few clinical signs in infected birds. Birds with LPAI may appear healthy and without signs of sickness; however, LPAI can cause mild clinical signs, such as slight facial swelling and some respiratory signs. LPAI is monitored because two strains of LPAI—the H5 and H7 strains—can mutate into high-pathogenicity forms.

**High-Pathogenicity Avian Influenza (HPAI):** This is a very infectious and fatal form of the disease that, once established, can spread rapidly from bird to bird or flock to flock. HPAI typically causes severe illness with high death losses. See below for clinical signs of HPAI.

### How AI Spreads

AI viruses spread primarily by direct contact between healthy and infected birds through respiratory secretions and feces. The disease can be spread through:

- Exposure of poultry to waterfowl;
- Illegal international movement of birds;
- Movement of people and farm equipment;
- Smuggling of poultry and poultry products;
- Contaminated poultry equipment (e.g., cages and crates, manure, vehicles, and egg flats) and people whose clothing or shoes have come in contact with the virus; and
- Direct bird-to-bird contact.

Diseases spread easily from infected waterfowl to domestic birds and poultry.



### Survival Period of the AI Virus

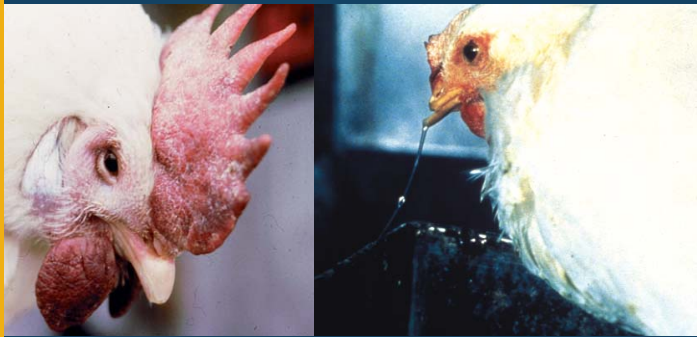
HPAI viruses can survive for long periods at low temperatures.

### Clinical Signs of HPAI

Birds affected with HPAI may show one or more of the following signs:

- Sudden death without clinical signs;
- Lack of energy and appetite;
- Decreased egg production and/or soft-shelled or misshapen eggs;
- Swelling of the head, eyelids, comb, wattles, and legs;
- Purple discoloration of the wattles, combs, and legs;
- Nasal discharge, coughing, and sneezing;
- Incoordination; and
- Diarrhea.

Birds with HPAI may show swelling of the head, eyelids, comb, and wattles. Nasal discharge is a sign of HPAI.



Purple discoloration of the comb may be an indicator of HPAI.

### Exotic Newcastle Disease (END)

END is a contagious and fatal viral disease that affects all bird species. It is one of the most infectious poultry diseases in the world. END is so deadly that many birds die without showing any signs of disease. In unvaccinated poultry flocks, a death rate of almost 100 percent can occur, and END can cause death even in vaccinated poultry. Poultry hobbyists and owners of pet birds should be especially careful because birds illegally smuggled into the United States are not quarantined and tested by USDA and therefore may carry the END virus.

If you buy a pet bird, be sure to request certification that the bird has been legally imported or is of U.S. stock. Further, smuggled pet birds, especially Amazon parrots from Latin America, pose a great risk of introducing END to the poultry flocks in the United States. As carriers of the disease, Amazon parrots do not show any typical signs but are capable of shedding the virus for longer than 1 year.

### Exotic Newcastle Disease

- Is a contagious and fatal viral disease,
- Affects all species of birds, and
- Is so deadly that many birds die without showing any signs of disease.

### How END Spreads

END is spread:

- Primarily through direct contact between healthy birds and the bodily discharges of infected birds;
- Rapidly among birds kept in confinement, such as commercially raised chickens and turkeys; and
- Through exposure to virus-bearing material picked up on shoes, clothing, equipment, and vehicles.

Birds raised in close confinement may spread diseases, such as END.





### Survival Period of the END Virus

The virus that causes END can survive in a warm and humid environment for several weeks. This environment could be birds' feathers, manure, and other materials. Frozen, the virus can survive for extremely long periods. However, it is destroyed quickly by dehydration or sunlight.

### Clinical Signs of END

- Sneezing, gasping for air, nasal discharge, coughing;
- Greenish, watery diarrhea;
- Depression, muscular tremors, drooping wings, twisting of head and neck, circling, and paralysis;
- Partial to complete drop in egg production;
- Production of thin-shelled eggs;
- Swelling of the tissues around the eyes and in the neck; and
- Sudden death and a high death rate in infected flocks.

Twisting of the neck is one of the signs birds may show when END has affected their nervous system.

Birds with END exhibit swelling of the tissues around the eyes and neck.



END can result in sudden death and a high overall mortality rate.

### Global Marketplace and Avian Diseases

Today's global marketplace means greater access than ever before to agricultural commodities from around the world. While the United States exercises great vigilance to ensure that imports and exports comply with international trade standards, with world trade, business travel, and global tourism, it has become easier to transport unwanted pests and diseases. For example:

- A visitor to a farm in Southeast Asia that has poultry infected with a disease can be on his or someone else's farm in the United States within a day or two, and possibly carry the virus on himself or on his clothes or shoes.
- Disease can come in through mislabeled, illegally imported poultry products, as it did in one instance with frozen ducks.
- Foreign animal diseases can be brought into the United States through smuggled products.

### Preventing HPAI and END From Entering the Country

A disease outbreak can cause millions of dollars' worth of losses to the Nation's or affected States' agricultural industry, as well as to individual producers and manufacturers. Disease in animal agriculture can spread easily through illegal export and import of animals. An outbreak in one country can rapidly affect the birds of another country. In fact, it is possible for birds illegally transported or exported from countries with a disease outbreak to spread the disease across the world within 48 hours. That is why USDA has strict regulations for importing animals and animal products. Current information on importing animals and animal products can be found at <<http://www.aphis.usda.gov/vs/ncie>>, the Web site for APHIS' National Center for Import/Export.

USDA-APHIS maintains clear rules for trade involving animals, animal products, and plants imported into or exported from the United States. APHIS recognizes that HPAI and END pose significant threats to animal health, and in the case of HPAI, it has the potential to threaten human health. Accordingly, USDA has safeguards in place to protect against the introduction of HPAI and END into the United States.

## Import Restrictions

- The primary safeguard to keep HPAI and other viruses out of the country is the trade restrictions USDA maintains on the importation of poultry and poultry products from countries affected by specific diseases.
- APHIS works closely with the U.S. Department of Homeland Security to prevent international passengers from bringing in foreign pests and diseases. More than 300 APHIS veterinarians are stationed throughout the United States to investigate suspected foreign animal diseases. USDA updates the Department of Homeland Security on agricultural threats so its employees can be extra vigilant in checking for prohibited products.
- In response to the growing volume of smuggled and improperly imported agricultural products entering the country, APHIS created the Smuggling, Interdiction, and Trade Compliance (SITC) unit, which conducts antismuggling activities.



A SITC officer demonstrates how exotic birds can be smuggled into the country in containers strapped to the smuggler's legs.

## International Standards

- To make sure that international animal-health standards represent the interests and concerns of the United States, APHIS is active in the World Organization for Animal Health, the international standards-setting body in Paris (known by the acronym OIE, which stands for L'Office International des Epizooties, its former name). Such international standards shape the future of animal trade worldwide.
- USDA works closely with international organizations like OIE and the United Nations' Food and Agriculture Organization (FAO) and World Health Organization (WHO) to assist HPAI-affected countries with disease prevention, management, and eradication activities. By helping these organizations prepare for, manage, or eradicate HPAI (H5N1) outbreaks, USDA can reduce the risk of the disease spreading from overseas to the United States.

## Quarantine

All imported live birds must be quarantined for 30 days at a USDA quarantine facility and tested for AI and END viruses before entering the country, except birds coming in from Canada. Returning U.S.-origin pet birds are required to be tested for AI and home quarantined unless they have been in Canada.

Birds quarantined at USDA-APHIS' New York Animal Import Center are housed in an area with ample room for movement.



## Surveillance

USDA works with Federal, State, and industry partners to monitor U.S. bird populations. Surveillance is conducted in four key areas: live-bird markets, commercial flocks, backyard flocks, and migratory bird populations.

**Remember, you are the best protection your birds have.**

AI and END

SECTION FOUR

PROTECTING THE  
UNITED STATES

**BIOSECURITY GUIDE**  
For Poultry and Bird Owners

# Protecting the United States From Avian Diseases

## Federal and State Responses to a Disease Outbreak

Federal and State agencies have response procedures for disease outbreaks. If there is an outbreak of HPAI or END, APHIS will head the emergency response and will work with the affected State departments of agriculture and the affected premises to quarantine, clean, disinfect, and cull the infected and exposed bird population in order to quickly contain and eradicate the disease. APHIS can also turn to its roster of accredited veterinarians and animal health technicians for additional help should it be needed.

USDA provides funding and support to States when LPAI is detected. Close attention is paid to the H5 and H7 strains of LPAI because of their potential to mutate into HPAI.

**Response Plans**— USDA works closely with its Federal, State and tribal partners, as well as industry stakeholders, to ensure that effective and coordinated emergency-response plans are ready should an outbreak of HPAI or END occur here.

**Testing**— USDA scientists have developed a rapid diagnostic test for AI and continue to improve the test's sensitivity. The test diagnoses AI within 3 hours, where older tests used to take up to 2 weeks.

# Contact Information Federal and State Veterinarians

AVIC = APHIS Area Veterinarian-in-Charge  
SV = State Veterinarian  
TV = Territorial Veterinarian

## ALABAMA

**Dr. O. W. Hester, AVIC**  
(334) 223-7141  
**Dr. Anthony G. Frazier, SV**  
(334) 240-7255

## ALASKA

**Dr. Gary L. Brickler, AVIC**  
(360) 753-9430  
**Dr. Bob Gerlach, SV**  
(907) 745-3236

## ARIZONA

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**Remember, you are the  
best protection your birds have.**

# BIOSECURITY GUIDE

## For Poultry and Bird Owners



**LOOK**  
for Signs.



**REPORT**  
Sick Birds.



**PRACTICE**  
Backyard Biosecurity.



United States Department of Agriculture  
Animal and Plant Health Inspection Service

Program Aid No. 1885 Issued August 2006

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United States Department of Agriculture  
Animal and Plant Health Inspection Service

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August 2006

# BIOSECURITY GUIDE

## For Poultry and Bird Owners

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John Clifford, D.V.M.

August 2006

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— John Clifford, D.V.M.

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*August 2006*

This guide was designed to provide useful information on biosecurity for poultry and bird owners. The United States works very hard to prevent infectious poultry diseases such as high-pathogenicity avian influenza and exotic Newcastle disease from being introduced into the country. To accomplish this, the U.S. Department of Agriculture (USDA) requires that all imported birds (poultry, pet birds, birds exhibited at zoos, and ratites) except those from Canada be quarantined and tested for the viruses that cause these two diseases before entering the country. USDA works cooperatively with State animal-health officials and the poultry industry to conduct surveillance of breeding flocks, live-bird markets, livestock auctions, poultry dealers, small-bird sales, fairs and shows, and backyard poultry. In addition to international import restrictions, veterinarians from USDA's Animal and Plant Health Inspection Service (APHIS) and individual States specifically trained to diagnose foreign animal diseases regularly conduct field investigations of suspicious disease conditions. University personnel, State animal-health officials, USDA-accredited veterinarians, and members of industry all help in this surveillance work.

Since 2004, APHIS has been conducting an extensive outreach and education program called Biosecurity For the Birds. The program reaches out to backyard poultry producers and pet-bird owners to educate them about the signs of infectious poultry diseases, the need to practice biosecurity, and the importance of reporting sick or dead birds. In fact, APHIS has a toll-free number (1-866-536-7593) to report sick or dying birds.

This Biosecurity Guide is part of our outreach program, and I encourage you to look at the other materials that are also available, including an excellent DVD/video on practicing biosecurity. These materials are free and can be found on our Web site at <http://www.aphis.usda.gov/vs>.

— **John Clifford, D.V.M.**  
**Deputy Administrator for Veterinary Services**  
 USDA-APHIS, Washington, DC

SECTION ONE

BIOSECURITY

BIOSECURITY GUIDE  
For Poultry and Bird Owners

SECTION ONE

# BIOSECURITY

**BIOSECURITY GUIDE**  
**For Poultry and Bird Owners**

SECTION ONE

# BIOSECURITY

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For Poultry and Bird Owners

SECTION ONE

BIOSECURITY

BIOSECURITY GUIDE  
For Poultry and Bird Owners

# Biosecurity:

## Why Biosecurity Is Important

In this section, you will find information about

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As a bird owner, keeping your birds healthy is a top priority.

## Why Be Concerned?

### Economic Impact of a Major Disease Outbreak

## What Is Biosecurity?

Biosecurity is

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Remember, you are the best protection your birds have.

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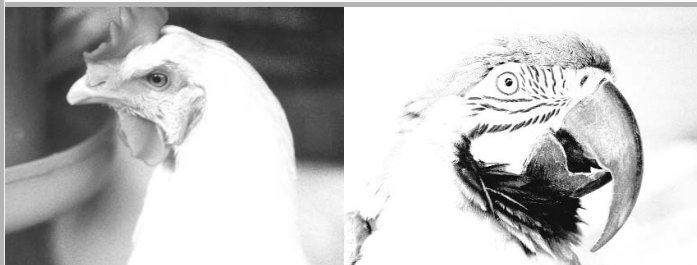
Remember, you are the  
best protection your birds have.

## Biosecurity: The Key to Keeping Your Birds Healthy

If you deal directly with poultry or pet birds, you have the responsibility to protect them against disease. By practicing biosecurity precautions, you can reduce the risk of disease-causing germs' going to or coming from your farm or home. Understanding the importance of biosecurity can help you take the necessary precautions to avoid spreading disease among your poultry and livestock.

In this section, you will find information about

- **Biosecurity,**
- **The importance of biosecurity, and**
- **Economic impacts of disease outbreaks.**



As a bird owner, keeping your birds healthy is a top priority.

### What Is Biosecurity?

Biosecurity means doing everything you can to keep diseases out of your flock. "Bio" refers to life, and "security" indicates protection. Biosecurity is the key to keeping your poultry healthy. It is what you do to reduce the chances of an infectious disease being carried to your farm, your poultry yard, your aviary, or your pet birds, by people, animals, equipment, or vehicles, either accidentally or on purpose.

#### Biosecurity is

- Using commonsense practices to protect your poultry and birds from all types of infectious agents—viral, bacterial, fungal, or parasitic;
- Doing everything possible to protect your birds from infectious diseases like exotic Newcastle disease (END) and avian influenza (AI); and
- Preventing disease-causing germs or microbes from entering your premises.

### Why Biosecurity Is Important

"Biosecurity" may not be a common household word. But, for poultry and bird owners it can spell the difference between health and disease. Practicing biosecurity can help keep disease away from your farm, and keep your birds healthy; healthy birds produce better, and increase your profits. Biosecurity measures are important for you as a poultry owner, for your neighbors, and for the U.S. poultry industry.

Biosecurity measures decrease the risk for

- Diseases such as END and AI on poultry farms;
- Loss of export markets, public concern, and cancellation of poultry shows, auctions, fairs, and exhibits as a result of disease outbreaks; and
- Quarantines resulting in financial losses due to disease outbreaks.

### Why Be Concerned?

#### Economic Impact of a Major Disease Outbreak

Diseases such as high-pathogenicity avian influenza (HPAI) and END can strike poultry quickly and without any warning signs of infection and cause major economic losses. So it is important for you as an individual bird owner, as well as for the U.S. poultry industry, to be alert to this disease threat.

In 2004, the value of the U.S. poultry industry was \$29 billion. Therefore, a major outbreak of HPAI or END would be costly to poultry owners, consumers, and taxpayers. [See page 17 for information about HPAI and END.]

- To eradicate END during the 2002–03 outbreak in southern California and other Western States, more than 3.2 million birds were euthanized at a cost of more than \$170 million. That figure does not take into account the personal loss of pets, which cannot be measured in dollars and cents.
- An outbreak of HPAI occurred in 1983 through 1984 in the Northeastern United States and resulted in the destruction of more than 17 million birds at a cost of nearly \$65 million in today's dollars. This outbreak also caused retail egg prices to increase by more than 30 percent.

**Remember, you are the  
best protection your birds have.**

SECTION TWO

PRACTICING  
BIOSECURITY

**BIOSECURITY GUIDE**  
For Poultry and Bird Owners

Biosecurity

SECTION TWO

# PRACTICING BIOSECURITY

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SECTION TWO

PRACTICING  
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BIOSECURITY GUIDE  
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# Steps to Disease Prevention

## Disease Prevention

## Biosecurity: Make It Your Daily Routine

## How Biosecurity Can Prevent the Spread of Disease

- Humans
- Vehicles
- Animals
- Carcasses
- Flocks

# Six Ways To Prevent Poultry Disease

Keep your distance.



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# Steps to Disease Prevention

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# Six Ways To Prevent Poultry Disease



## I. Keep your distance.

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# Steps to Disease Prevention

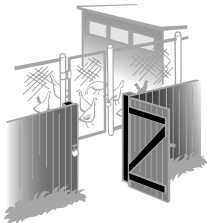
## Disease Prevention

## Biosecurity: Make It Your Daily Routine

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# Six Ways To Prevent Poultry Disease



## I. Keep your distance.

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## Steps to Disease Prevention

### Disease Prevention

As a bird owner, prevention is an important step that you can take in order to keep disease from reaching your premises. It is important to keep diseases away from your property. Good bird management and strict biosecurity precautions will protect your birds against most infectious diseases and keep them healthy. Biosecurity is also important for your neighbors, so you don't spread illness from your birds to theirs or bring home diseases from their birds after visiting. And finally, biosecurity is important so our country's poultry industry is not at risk.

### Biosecurity: Make It Your Daily Routine

Consistent biosecurity practices are the best way to prevent bird diseases like END and AI from spreading in the United States should we have an outbreak. These viruses can be carried to poultry in multiple ways—people, animals, equipment, or vehicles—either accidentally or on purpose, increasing the risk of healthy birds' becoming sick birds. By practicing biosecurity as highlighted in the six steps shown below, you are keeping your birds safe from potentially deadly diseases. Making biosecurity a part of your daily routine while caring for your birds will decrease the chance of END or AI showing up on your doorstep.

### How Biosecurity Can Prevent the Spread of Disease

#### Proper biosecurity can prevent the spread of infection from

- **Humans** (hands, hair, clothing, footwear);
- **Vehicles** (contaminated vehicles and equipment);
- **Animals** (domestic and wild, including rodents);
- **Carcasses** (those that are improperly disposed of) and manure, litter, debris, and feathers; and
- **Flocks** (other people's backyard flocks, particularly if the birds are housed outside).

## Six Ways To Prevent Poultry Disease

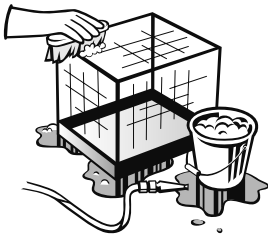


### 1. Keep your distance.

To keep your flock in the best of health, you need to isolate your birds from visitors and other birds. Here's how:

- Restrict access to your property and your birds.
- Consider fencing off the area where your birds are; this will form a barrier between "clean" and "dirty" areas. The clean area will be the area right around your birds.
- Allow only people who take care of your birds to come into contact with them; if visitors to your property want to see your birds, be sure they wash up first and clean their shoes.
- Keep clean boots for visitors to wear; *however*, if your visitors have birds of their own, **do not let them near your birds at all**.
- Game birds and migratory waterfowl should not have contact with your flock because they can carry germs and diseases. If your birds are outdoors, try to keep them in an enclosed area covered with a solid roof and wire-mesh or netted sides. Provide food and water in the covered area only.
- Be sure to have a rodent-control program.

Keep it clean.



Don't haul disease home.



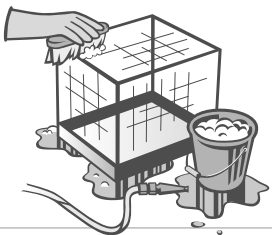
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Cleaning and Disinfecting

- Step 1:
- Step 2:

2. Keep it clean.



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3. Don't haul disease home.



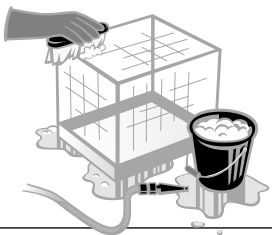
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Cleaning and Disinfecting

Step 1:

Step 2:

2. Keep it clean.



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3. Don't haul disease home.

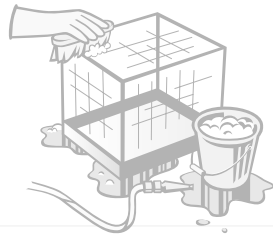


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Cleaning and Disinfecting

Step 1:

Step 2:



## 2. Keep it clean.

You wouldn't think of tracking dirt and disease into your house, where they could infect your family. Don't do that to your birds either! Germs can be picked up on shoes and clothing and moved from one area to another. To keep your birds germ free:

- Keep a pair of shoes and a set of clothes to wear only when around your birds.
- Launder your clothes in a washer and dryer to kill germs.
- Wash your hands with soap, water, and a disinfectant before entering your bird area.
- Clean cages, feeders, and water on a daily basis.
- Clean and disinfect equipment that comes in contact with your birds or their droppings.
- Before disinfecting, remove all manure, litter, debris, and feathers and clean surfaces with soap and water.
- Wood surfaces cannot be disinfected as well as other surfaces. But if they are covered in polyurethane, they can be disinfected.
- Keep clutter out of the poultry areas so they are easy to clean.
- Properly dispose of dead birds by burial or incineration or take them to an approved landfill. Check on local ordinances for acceptable disposal methods.



## 3. Don't haul disease home.

Your car and truck tires, poultry cages, and equipment can all harbor "germs." To keep disease away from your premises, do the following:

- If you travel to a location where other birds are present, even to the feed store, be sure to clean and disinfect those items before you return home.
- If you take some of your birds to a fair or exhibition, separate them from the rest of your flock and watch them for at least 2 weeks after the event to ensure that they are free of disease.
- Separate new birds from your flock for at least **30 days** before putting them with the rest of your birds. Ensure that your new birds are tested for END and AI before you introduce them into your flock.
- To prevent disease, it is best not to mix young and old birds or birds from different species or different sources.

### Cleaning and Disinfecting

You must first **clean** tools, tires, car or truck wheel wells, etc., **before** you **disinfect** them. Cleaning means washing **all** mud, road dirt, and/or manure off of tires, tools, and/or garden equipment. If you try to disinfect and wash at the same time, you will only wash the disinfectant from the tools.

**Step 1:** Clean all the dirt and manure off the surface of the equipment. Laundry or dish soap works well.

**Step 2:** Wash down with a good disinfectant to kill poultry viruses (shoes can be brushed or scrubbed off and then sprayed with disinfectant).

Disinfectants come in a number of forms that you can purchase at most hardware or farm-supply stores or groceries.

Examples of Disinfectants

Don't borrow disease  
from your neighbor.



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Making an Easy Footbath

Know the warning signs  
of infectious bird diseases.



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Using "fake grass" in a  
footbath helps scrub shoes.



Mix disinfectant with water and cover the  
"grass" mat in the bottom of the pan.



Examples of Disinfectants

4. Don't borrow disease from your neighbor.



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Making an Easy Footbath

5. Know the warning signs of infectious bird diseases.



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Examples of Disinfectants

4. Don't borrow disease from your neighbor.



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Making an Easy Footbath

5. Know the warning signs of infectious bird diseases.



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Using "fake grass" in a footbath helps scrub shoes.



Mix disinfectant with water and cover the "grass" mat in the bottom of the pan.



### Examples of Disinfectants

**Household Bleach**—Mix 3/4 cup of bleach per gallon of water. If you don't have a measuring cup handy, you can mix 1 part bleach to 10 parts water. This formula works for shoes, buckets, shovels, and pitchforks. When you use bleach, make sure all dirt and manure have been cleaned off first.

**Spray Disinfectant**—Be sure the label says it kills bacteria and viruses. Sprays can work well on shoes and grooming equipment. Remove all manure and dirt before spraying.

**Waterless Hand Sanitizers**—They come in gels or hand wipes. These are good for use after visiting poultry. Be sure to work the cleaner all through your fingers and under the nails.

**Other Disinfectants**—Always mix and use according to the label. Two examples are One Stroke Environ® (available from Steris Corporation) and Tek-trol® (from Bio-Tek Industries). They are good choices for disinfecting car tires, and they also work well in footbaths.

### Making an Easy Footbath

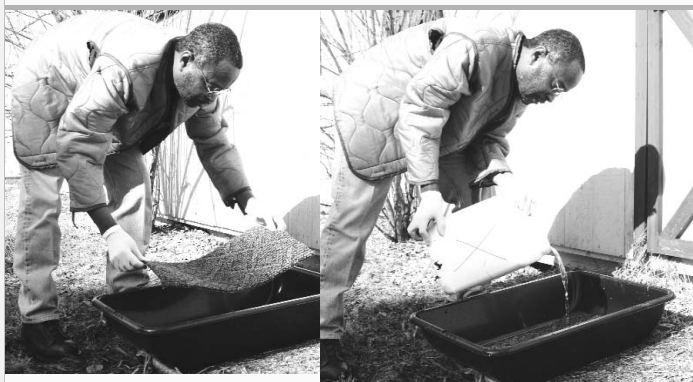
#### You will need

1. A low plastic pan or bin, wide enough to fit an adult's foot and shallow enough to step into easily;
2. A plastic doormat (the "fake grass" mats work well);
3. A disinfectant that works well for most situations, such as Tek-trol or One Stroke Environ; and
4. Water.

Mix the disinfectant with water following label instructions. Put the doormat in the plastic pan. Add disinfectant so that the bottom of the "grass" is wet. Ask visitors to walk through the footbath, wiping their feet on the mat. The "grass" scrubs their shoes a bit as they wipe them, and applies the disinfectant. When the liquid starts to get dirty, empty it and put in new disinfectant.

Using "fake grass" in a footbath helps scrub shoes.

Mix disinfectant with water and cover the "grass" mat in the bottom of the pan.



### 4. Don't borrow disease from your neighbor.

Your birds' health is so important that you should never, by accident or design, share anything pertaining to them. For instance:

- Do not share birds, lawn and garden equipment, tools, or poultry supplies with your neighbors or other bird owners. If you do, clean and disinfect them before they reach your premises.
- Remember to clean and disinfect borrowed items before returning them.
- Never share items such as wooden pallets or cardboard egg cartons because they are porous and cannot be adequately cleaned and disinfected.



### 5. Know the warning signs of infectious bird diseases.

Early detection is important to prevent the spread of disease. The list below includes some of the signs that indicate something might be wrong with your birds. (For more information about AI and END, please see page 17.)

- Sudden increase in bird deaths in your flock;
- Diarrhea (greenish or watery);
- Drop in egg production; soft- or thin-shelled, misshapen eggs;
- Sneezing, gasping for air, nasal discharge, coughing;
- Lack of energy and loss of appetite;
- Swelling of tissues around eyes and in neck;
- Purple discoloration of the wattles, combs, and legs (AI); and
- Depression, muscular tremors, drooping wings, twisting of head and neck, and a lack of coordination or complete paralysis (END).

Report sick birds.



Biosecurity Tips for Pet-Bird Owners

A Note About Vaccines



6. Report sick birds.



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A Note About Vaccines

Biosecurity Tips for Pet-Bird Owners

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6. Report sick birds.



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A Note About Vaccines

Biosecurity Tips for Pet-Bird Owners

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## 6. Report sick birds.



Early reporting is important to protecting the health of your birds! Report unusual signs of disease or unexpected deaths among your birds. Call your:

- Agricultural extension agent,
- Local veterinarian,
- The State Veterinarian or State animal/poultry diagnostic laboratory; or
- USDA–APHIS Veterinary Services office.

USDA operates a toll-free hotline (**1-866-536-7593**) with veterinarians to help you, and there is no charge for USDA veterinarians to work with you to conduct a disease investigation. USDA wants to test sick birds to make sure they do not have a serious poultry disease. (For specific contact numbers, please see the **contact information** section on page 29 of this handbook.)

An outbreak of a bird disease such as END and HPAI could not only harm or kill your birds but could spread so quickly that it could kill other neighboring birds.

### A Note About Vaccines

Vaccination is another tool to protect your birds against END. Your local agricultural extension office or feed stores that sell vaccines in your area can give vital information on the proper vaccines for your birds.

In the United States, vaccination against AI is not routine, and when it is used, it is mainly done within particular areas of the poultry industry. Because HPAI in poultry is considered exotic to the United States, eradication is the preferred response to an outbreak. Should vaccine be used against HPAI, it would be done as part of an eradication strategy under Federal Government direction.

AI vaccine will prevent clinical signs of disease in birds. And in an outbreak, vaccine can be used to protect healthy birds and to slow the spread of disease but not to prevent infection. Vaccination is used as one tool along with the other actions necessary to stop an HPAI outbreak (depopulation, cleaning and disinfection, movement control, surveillance, biosecurity, etc.).

## Biosecurity Tips for Pet-Bird Owners

- When buying a pet bird, request certification from the seller that the bird was legally imported or came from U.S. stock and was healthy prior to shipment.
- Isolate new birds from your other birds for at least 30 days.
- Restrict access to your birds, especially from people who own birds that are housed outside.
- Keep your birds away from other birds.
- Clean and disinfect your clothing and shoes if you have been near other birds, such as at a bird club meeting or bird fair or at a venue with live poultry.
- Wash your hands thoroughly with soap, water, and a disinfectant before handling your birds.
- Keep cages, food and water clean on a daily basis.
- Remove feed from bags; place it in a clean, sealed container; and throw bags away.
- Do not borrow or share bird supplies. If you must, clean and disinfect the items before bringing them home.
- Know the warning signs of infectious bird diseases.
- If your bird shows unusual signs of disease or dies unexpectedly, call your avian veterinarian, local Cooperative Extension office, the State Veterinarian, the State animal diagnostic laboratory, or the USDA office, toll free, at 1-866-536-7593.



Biosecurity Tips for Handling Wild Birds

Practicing Biosecurity



SECTION THREE

AI and END

Biosecurity Tips for Handling Wild Birds

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SECTION THREE

AI and END

BIOSECURITY GUIDE  
For Poultry and Bird Owners



Biosecurity Tips for Handling Wild Birds

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SECTION THREE

AI and END



BIOSECURITY GUIDE  
For Poultry and Bird Owners

**Biosecurity Tips for Handling Wild Birds**

Wild birds can carry several diseases, including AI. Observe wildlife from a distance, so you are protected from possible exposure to pathogens and you minimize disturbances to the animal. Here are some tips if you do come into contact with wild birds.

- Do not rub your eyes, eat, drink, or smoke until you have thoroughly washed your hands with soap and water.
- Do not pick up diseased or dead wild birds. Contact your State, tribal or Federal natural-resources agency if you find a sick or dead bird.
- Hunters should follow routine precautions when handling wild birds. These include (1) not handling or eating sick birds, (2) wearing disposable gloves when handling or cleaning wild birds, and (3) thoroughly washing knives, equipment, and surfaces that come in contact with wild birds.
- Hunters should not eat, drink, or smoke while handling animals.
- Wild birds and game should be thoroughly cooked before eating.



SECTION THREE

# AI and END

## BIOSECURITY GUIDE For Poultry and Bird Owners

# Avian Influenza and Exotic Newcastle Disease

In this section, you will find information about

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## What Is Disease?

## How a Virus Spreads in the Environment

### 1. Directly

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### 2. Indirectly

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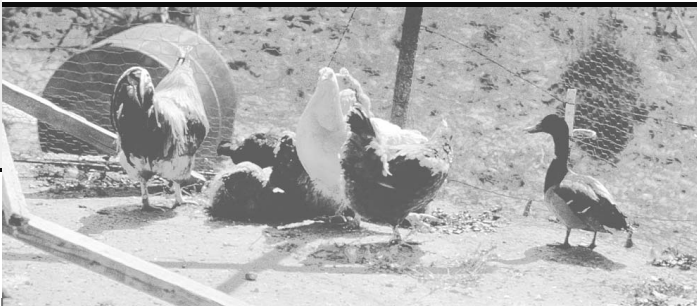
### 3. Other Vectors

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# Avian Influenza (AI)

## How AI Spreads

Diseases spread easily from infected waterfowl to domestic birds and poultry.



# Avian Influenza and Exotic Newcastle Disease

In this section, you will find information about

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## What Is Disease?

## How a Virus Spreads in the Environment

### 1. Directly

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### 2. Indirectly

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### 3. Other Vectors

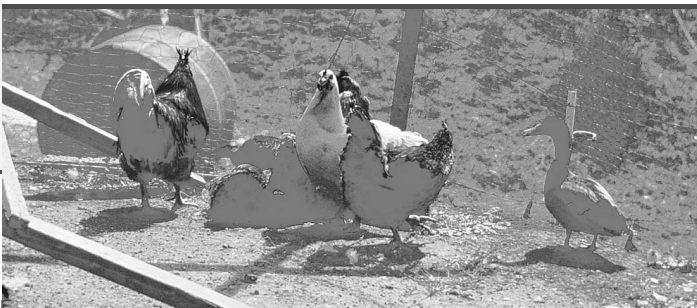
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# Avian Influenza (AI)

## How AI Spreads

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Diseases spread easily from infected waterfowl to domestic birds and poultry.



# Avian Influenza and Exotic Newcastle Disease

In this section, you will find information about

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## What Is Disease?

## How a Virus Spreads in the Environment

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### 3. Other Vectors

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# Avian Influenza (AI)

## How AI Spreads

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Diseases spread easily from infected waterfowl to domestic birds and poultry.



# Avian Influenza and Exotic Newcastle Disease

Today, raising poultry of all kinds is growing in popularity. You need caring, perseverance, and a good deal of knowledge to breed and raise birds, including knowledge of diseases that can potentially affect your flock.

In this section, you will find information about

- How a virus can spread,
- Avian influenza (AI),
- Exotic Newcastle disease (END), and
- The interconnectivity of the global marketplace and avian diseases.

## What Is Disease?

In common terms, disease is an abnormal condition that is the result of infection, basic weakness, or environmental stress. Disease prevents normal functioning. Its effects can range from reduced production and loss of energy to death. Disease can be infectious or noninfectious.

In poultry, there are four main classes of disease-causing agents: bacteria, viruses, fungi, and parasites. Viruses cause disease, such as AI ("bird flu") and END.

## How a Virus Spreads in the Environment

### 1. Directly

- As a result of contact between a sick or infected bird and a healthy bird or between carrier birds and healthy birds;
- Contact with infected manure, litter, debris, or feathers; and
- Aerosol transmission through respiratory droplets.

### 2. Indirectly

- Virus-bearing material picked up on shoes, clothing, hands, and vehicles is then carried to healthy birds.

### 3. Other Vectors

- Wild animals, rodents, and insects.

## Avian Influenza (AI)

AI—also known as bird flu, fowl pest, or fowl plague—is a respiratory disease of birds. AI viruses can infect chickens, turkeys, pheasants, quail, ducks, geese, and guinea fowl, as well as a wide variety of other birds. Migratory waterfowl seem to be a natural reservoir/host for AI viruses. Type A influenza viruses are classified according to severity of illness they cause. AI viruses can be classified into low pathogenicity and high pathogenicity based on the severity of the illness they cause in birds.

**Low-Pathogenicity Avian Influenza (LPAI):** Most AI strains are classified as LPAI and cause few clinical signs in infected birds. Birds with LPAI may appear healthy and without signs of sickness; however, LPAI can cause mild clinical signs, such as slight facial swelling and some respiratory signs. LPAI is monitored because two strains of LPAI—the H5 and H7 strains—can mutate into high-pathogenicity forms.

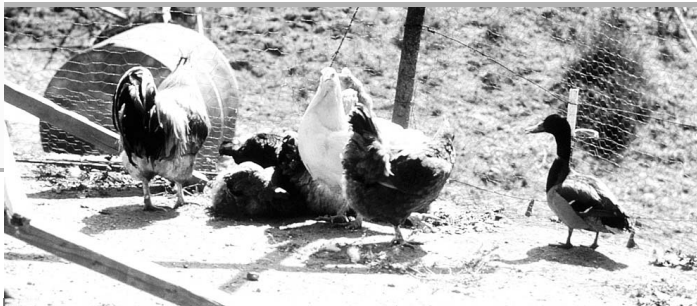
**High-Pathogenicity Avian Influenza (HPAI):** This is a very infectious and fatal form of the disease that, once established, can spread rapidly from bird to bird or flock to flock. HPAI typically causes severe illness with high death losses. See below for clinical signs of HPAI.

## How AI Spreads

AI viruses spread primarily by direct contact between healthy and infected birds through respiratory secretions and feces. The disease can be spread through:

- Exposure of poultry to waterfowl;
- Illegal international movement of birds;
- Movement of people and farm equipment;
- Smuggling of poultry and poultry products;
- Contaminated poultry equipment (e.g., cages and crates, manure, vehicles, and egg flats) and people whose clothing or shoes have come in contact with the virus; and
- Direct bird-to-bird contact.

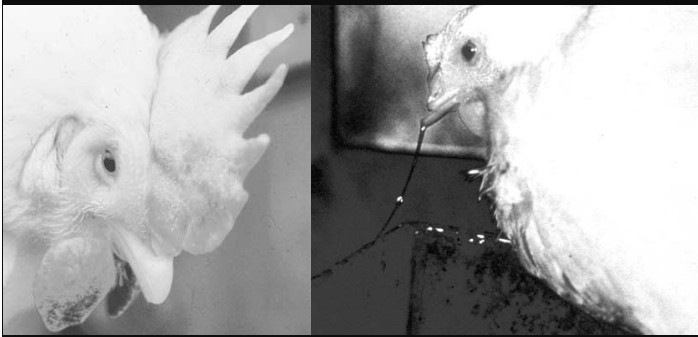
Diseases spread easily from infected waterfowl to domestic birds and poultry.



Survival Period of the AI Virus

Clinical Signs of HPAI

Birds with HPAI may show swelling of the head, eyelids, comb, and wattles. Nasal discharge is a sign of HPAI.



Purple discoloration of the comb may be an indicator of HPAI.

Exotic Newcastle Disease (END)

Exotic Newcastle Disease

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How END Spreads

Birds raised in close confinement may spread diseases, such as END.

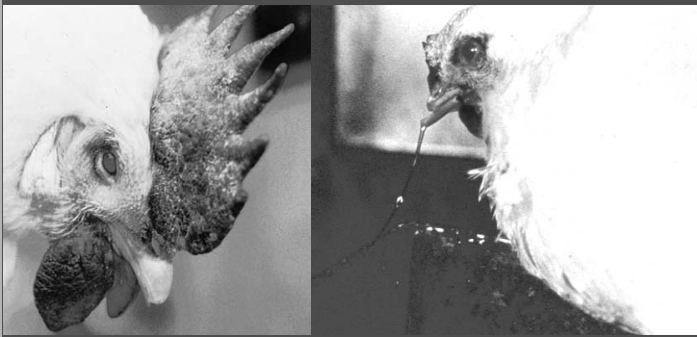


Survival Period of the AI Virus

Clinical Signs of HPAI

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Exotic Newcastle Disease (END)

Exotic Newcastle Disease

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How END Spreads

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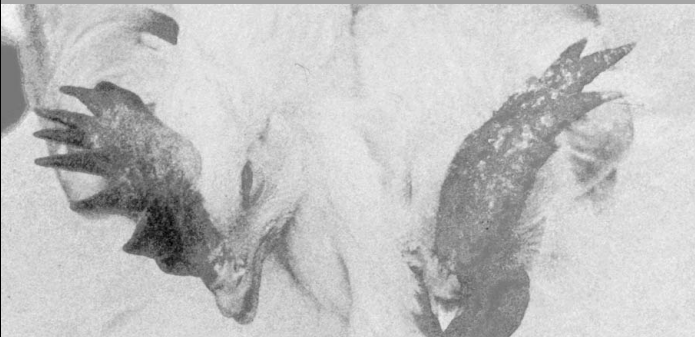
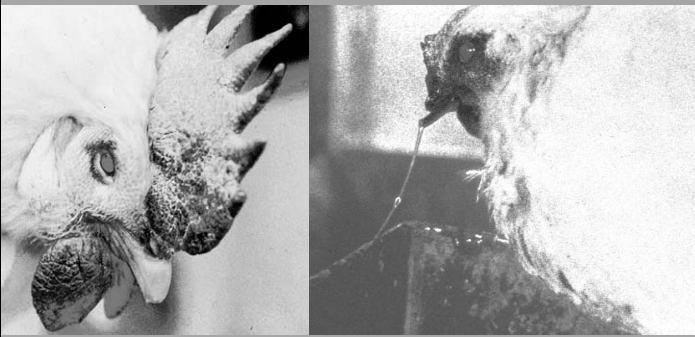


Survival Period of the AI Virus

Clinical Signs of HPAI

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Exotic Newcastle Disease (END)

Exotic Newcastle Disease

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How END Spreads

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### Survival Period of the AI Virus

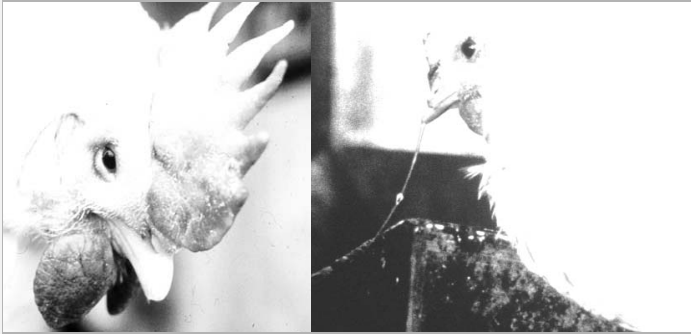
HPAI viruses can survive for long periods at low temperatures.

### Clinical Signs of HPAI

Birds affected with HPAI may show one or more of the following signs:

- Sudden death without clinical signs;
- Lack of energy and appetite;
- Decreased egg production and/or soft-shelled or misshapen eggs;
- Swelling of the head, eyelids, comb, wattles, and legs;
- Purple discoloration of the wattles, combs, and legs;
- Nasal discharge, coughing, and sneezing;
- Incoordination; and
- Diarrhea.

Birds with HPAI may show swelling of the head, eyelids, comb, and wattles. Nasal discharge is a sign of HPAI.



Purple discoloration of the comb may be an indicator of HPAI.

### Exotic Newcastle Disease (END)

END is a contagious and fatal viral disease that affects all bird species. It is one of the most infectious poultry diseases in the world. END is so deadly that many birds die without showing any signs of disease. In unvaccinated poultry flocks, a death rate of almost 100 percent can occur, and END can cause death even in vaccinated poultry. Poultry hobbyists and owners of pet birds should be especially careful because birds illegally smuggled into the United States are not quarantined and tested by USDA and therefore may carry the END virus.

If you buy a pet bird, be sure to request certification that the bird has been legally imported or is of U.S. stock. Further, smuggled pet birds, especially Amazon parrots from Latin America, pose a great risk of introducing END to the poultry flocks in the United States. As carriers of the disease, Amazon parrots do not show any typical signs but are capable of shedding the virus for longer than 1 year.

### Exotic Newcastle Disease

- Is a contagious and fatal viral disease,
- Affects all species of birds, and
- Is so deadly that many birds die without showing any signs of disease.

### How END Spreads

END is spread:

- Primarily through direct contact between healthy birds and the bodily discharges of infected birds;
- Rapidly among birds kept in confinement, such as commercially raised chickens and turkeys; and
- Through exposure to virus-bearing material picked up on shoes, clothing, equipment, and vehicles.

Birds raised in close confinement may spread diseases, such as END.

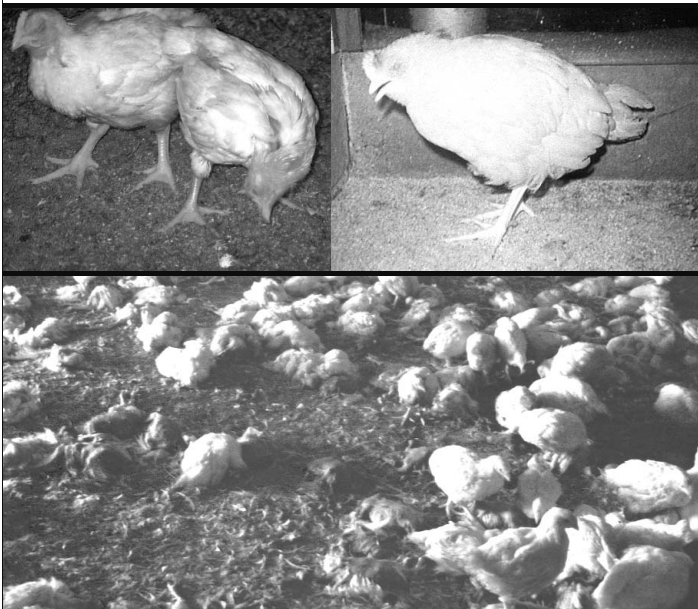


**Survival Period of the END Virus**

**Clinical Signs of END**

Twisting of the neck is one of the signs birds may show when END has affected their nervous system.

Birds with END exhibit swelling of the tissues around the eyes and neck.



END can result in sudden death and a high overall mortality rate.

**Global Marketplace and Avian Diseases**

**Preventing HPAI and END From Entering the Country**

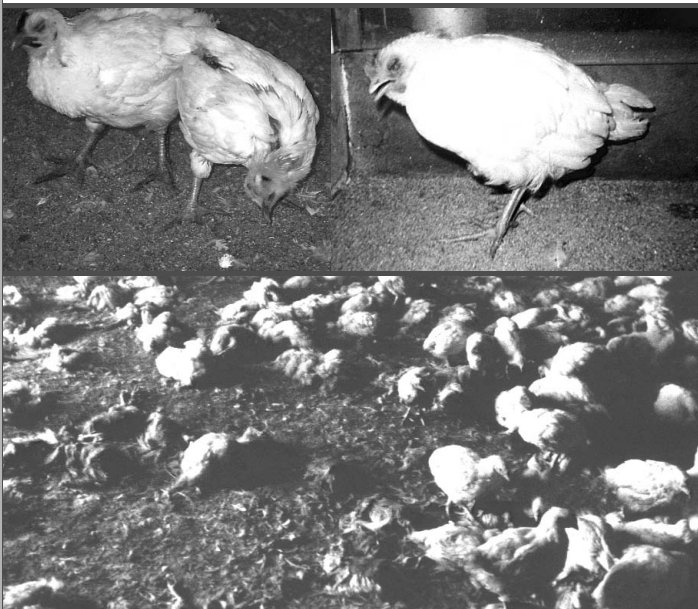
Survival Period of the END Virus

Clinical Signs of END

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Global Marketplace and Avian Diseases

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Preventing HPAI and END From Entering the Country

Survival Period of the END Virus

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Global Marketplace and Avian Diseases

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Preventing HPAI and END From Entering the Country

### Survival Period of the END Virus

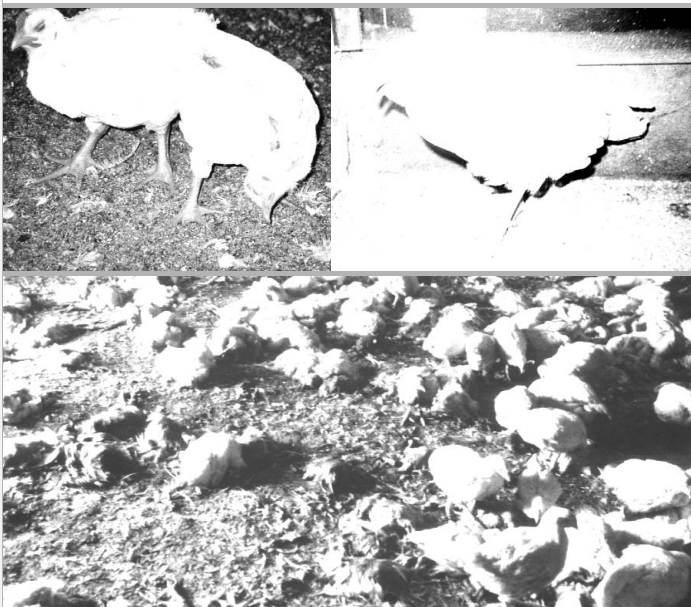
The virus that causes END can survive in a warm and humid environment for several weeks. This environment could be birds' feathers, manure, and other materials. Frozen, the virus can survive for extremely long periods. However, it is destroyed quickly by dehydration or sunlight.

### Clinical Signs of END

- Sneezing, gasping for air, nasal discharge, coughing;
- Greenish, watery diarrhea;
- Depression, muscular tremors, drooping wings, twisting of head and neck, circling, and paralysis;
- Partial to complete drop in egg production;
- Production of thin-shelled eggs;
- Swelling of the tissues around the eyes and in the neck; and
- Sudden death and a high death rate in infected flocks.

Twisting of the neck is one of the signs birds may show when END has affected their nervous system.

Birds with END exhibit swelling of the tissues around the eyes and neck.



END can result in sudden death and a high overall mortality rate.

### Global Marketplace and Avian Diseases

Today's global marketplace means greater access than ever before to agricultural commodities from around the world. While the United States exercises great vigilance to ensure that imports and exports comply with international trade standards, with world trade, business travel, and global tourism, it has become easier to transport unwanted pests and diseases. For example:

- A visitor to a farm in Southeast Asia that has poultry infected with a disease can be on his or someone else's farm in the United States within a day or two, and possibly carry the virus on himself or on his clothes or shoes.
- Disease can come in through mislabeled, illegally imported poultry products, as it did in one instance with frozen ducks.
- Foreign animal diseases can be brought into the United States through smuggled products.

### Preventing HPAI and END From Entering the Country

A disease outbreak can cause millions of dollars' worth of losses to the Nation's or affected States' agricultural industry, as well as to individual producers and manufacturers. Disease in animal agriculture can spread easily through illegal export and import of animals. An outbreak in one country can rapidly affect the birds of another country. In fact, it is possible for birds illegally transported or exported from countries with a disease outbreak to spread the disease across the world within 48 hours. That is why USDA has strict regulations for importing animals and animal products. Current information on importing animals and animal products can be found at <<http://www.aphis.usda.gov/vs/ncie>>, the Web site for APHIS' National Center for Import/Export.

USDA-APHIS maintains clear rules for trade involving animals, animal products, and plants imported into or exported from the United States. APHIS recognizes that HPAI and END pose significant threats to animal health, and in the case of HPAI, it has the potential to threaten human health. Accordingly, USDA has safeguards in place to protect against the introduction of HPAI and END into the United States.

## Import Restrictions

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A SITC officer demonstrates how exotic birds can be smuggled into the country in containers strapped to the smuggler's legs.

## International Standards

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## Quarantine

Birds quarantined at USDA-APHIS' New York Animal Import Center are housed in an area with ample room for movement.



## Surveillance

**Remember, you are the best protection your birds have.**

## Import Restrictions

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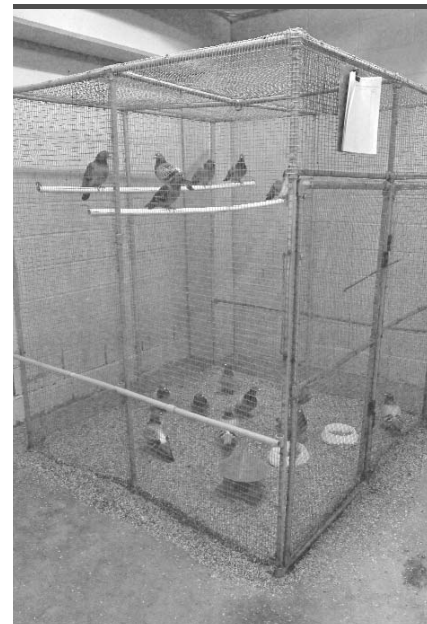
A SITC officer demonstrates how exotic birds can be smuggled into the country in containers strapped to the smuggler's legs.

## International Standards

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## Import Restrictions

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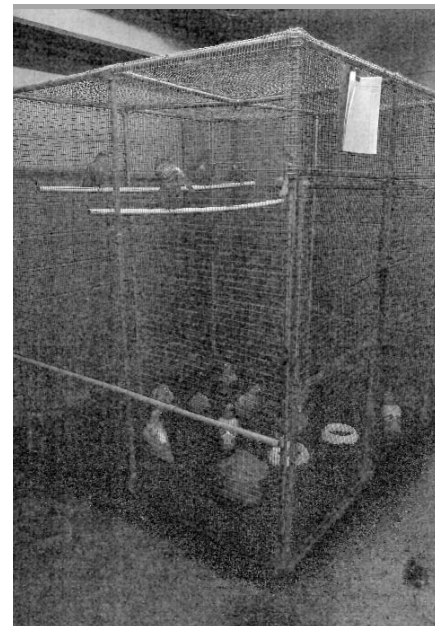
## International Standards

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## Quarantine

Birds quarantined at USDA-APHIS' New York Animal Import Center are housed in an area with ample room for movement.



## Surveillance

**Remember, you are the best protection your birds have.**

## Import Restrictions

- The primary safeguard to keep HPAI and other viruses out of the country is the trade restrictions USDA maintains on the importation of poultry and poultry products from countries affected by specific diseases.
- APHIS works closely with the U.S. Department of Homeland Security to prevent international passengers from bringing in foreign pests and diseases. More than 300 APHIS veterinarians are stationed throughout the United States to investigate suspected foreign animal diseases. USDA updates the Department of Homeland Security on agricultural threats so its employees can be extra vigilant in checking for prohibited products.
- In response to the growing volume of smuggled and improperly imported agricultural products entering the country, APHIS created the Smuggling, Interdiction, and Trade Compliance (SITC) unit, which conducts antismuggling activities.



A SITC officer demonstrates how exotic birds can be smuggled into the country in containers strapped to the smuggler's legs.

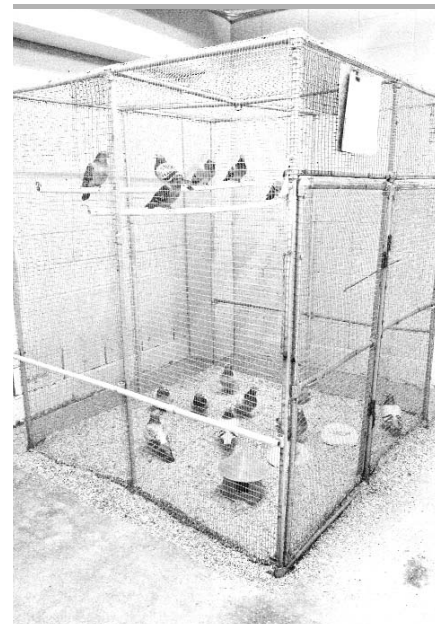
## International Standards

- To make sure that international animal-health standards represent the interests and concerns of the United States, APHIS is active in the World Organization for Animal Health, the international standards-setting body in Paris (known by the acronym OIE, which stands for L'Office International des Epizooties, its former name). Such international standards shape the future of animal trade worldwide.
- USDA works closely with international organizations like OIE and the United Nations' Food and Agriculture Organization (FAO) and World Health Organization (WHO) to assist HPAI-affected countries with disease prevention, management, and eradication activities. By helping these organizations prepare for, manage, or eradicate HPAI (H5N1) outbreaks, USDA can reduce the risk of the disease spreading from overseas to the United States.

## Quarantine

All imported live birds must be quarantined for 30 days at a USDA quarantine facility and tested for AI and END viruses before entering the country, except birds coming in from Canada. Returning U.S.-origin pet birds are required to be tested for AI and home quarantined unless they have been in Canada.

Birds quarantined at USDA-APHIS' New York Animal Import Center are housed in an area with ample room for movement.



## Surveillance

USDA works with Federal, State, and industry partners to monitor U.S. bird populations. Surveillance is conducted in four key areas: live-bird markets, commercial flocks, backyard flocks, and migratory bird populations.

**Remember, you are the best protection your birds have.**

AI and END

SECTION FOUR

PROTECTING THE  
UNITED STATES

BIOSECURITY GUIDE  
For Poultry and Bird Owners

AI and END

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# Protecting the United States From Avian Diseases

## Federal and State Responses to a Disease Outbreak

# Contact Information Federal and State Veterinarians

ALABAMA	DELAWARE
ALASKA	DISTRICT OF COLUMBIA
ARIZONA	FLORIDA
ARKANSAS	GEORGIA
CALIFORNIA	GUAM
COLORADO	HAWAII
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# Protecting the United States From Avian Diseases

## Federal and State Responses to a Disease Outbreak

Federal and State agencies have response procedures for disease outbreaks. If there is an outbreak of HPAI or END, APHIS will head the emergency response and will work with the affected State departments of agriculture and the affected premises to quarantine, clean, disinfect, and cull the infected and exposed bird population in order to quickly contain and eradicate the disease. APHIS can also turn to its roster of accredited veterinarians and animal health technicians for additional help should it be needed.

USDA provides funding and support to States when LPAI is detected. Close attention is paid to the H5 and H7 strains of LPAI because of their potential to mutate into HPAI.

**Response Plans**— USDA works closely with its Federal, State and tribal partners, as well as industry stakeholders, to ensure that effective and coordinated emergency-response plans are ready should an outbreak of HPAI or END occur here.

**Testing**— USDA scientists have developed a rapid diagnostic test for AI and continue to improve the test's sensitivity. The test diagnoses AI within 3 hours, where older tests used to take up to 2 weeks.

# Contact Information Federal and State Veterinarians

AVIC = APHIS Area Veterinarian-in-Charge  
SV = State Veterinarian  
TV = Territorial Veterinarian

## ALABAMA

**Dr. O. W. Hester, AVIC**  
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**Dr. Anthony G. Frazier, SV**  
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## ALASKA

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**Dr. Bob Gerlach, SV**  
(907) 745-3236

## ARIZONA

**Dr. Hortentia Harris, AVIC**  
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**Dr. Richard D. Willer, SV**  
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## ARKANSAS

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**Dr. George Badley, SV**  
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**Dr. Richard E. Breitmeyer, SV**  
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## COLORADO

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## CONNECTICUT

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**Dr. Mary Lis, SV**  
(860) 713-2505

## DELAWARE

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**Dr. Michael Vanderklok**  
(302) 739-4811

## DISTRICT OF COLUMBIA

**Dr. Steven N. Finch, AVIC**  
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## FLORIDA

**Dr. Robert E. Southall, AVIC**  
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**Dr. Thomas J. Holt, SV**  
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## GEORGIA

**Dr. Edgardo Arza, AVIC**  
(770) 922-7860  
**Dr. Lee M. Myers, SV**  
(404) 656-3671

## GUAM

**Dr. Steven Nusbaum, TV**  
(671) 734-3490 ext #9

## HAWAII

**Dr. Gary L. Brickler, AVIC**  
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**Dr. Jim Foppoli, SV**  
(808) 483-7111

## IDAHO

**Dr. Cynthia Gaborick, AVIC**  
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**Mr. John Chatburn, Acting SV**  
(208) 332-8540

## ILLINOIS

**Lennis C. Knight, AVIC**  
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**Dr. Mark Ernst, SV**  
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IOWA

KANSAS

KENTUCKY

LOUISIANA

MAINE

MARYLAND

MASSACHUSETTS

MICHIGAN

MINNESOTA

MISSISSIPPI

MISSOURI

MONTANA

NEBRASKA

NEVADA

NEW HAMPSHIRE

NEW JERSEY

NEW MEXICO

NEW YORK

NORTH CAROLINA

NORTH DAKOTA

OHIO

OKLAHOMA

OREGON

PENNSYLVANIA

PUERTO RICO

RHODE ISLAND

SOUTH CAROLINA

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TENNESSEE

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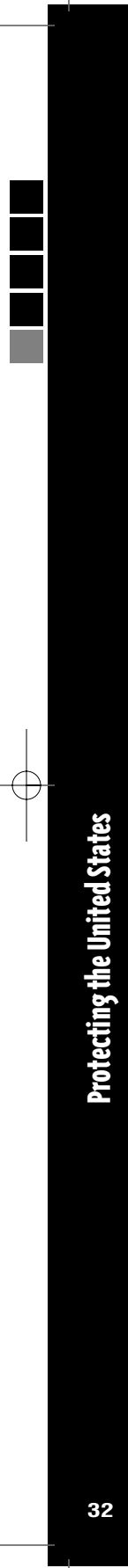
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TEXAS

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VIRGINIA WISCONSIN

VIRGIN ISLANDS WYOMING

WASHINGTON

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## WEST VIRGINIA

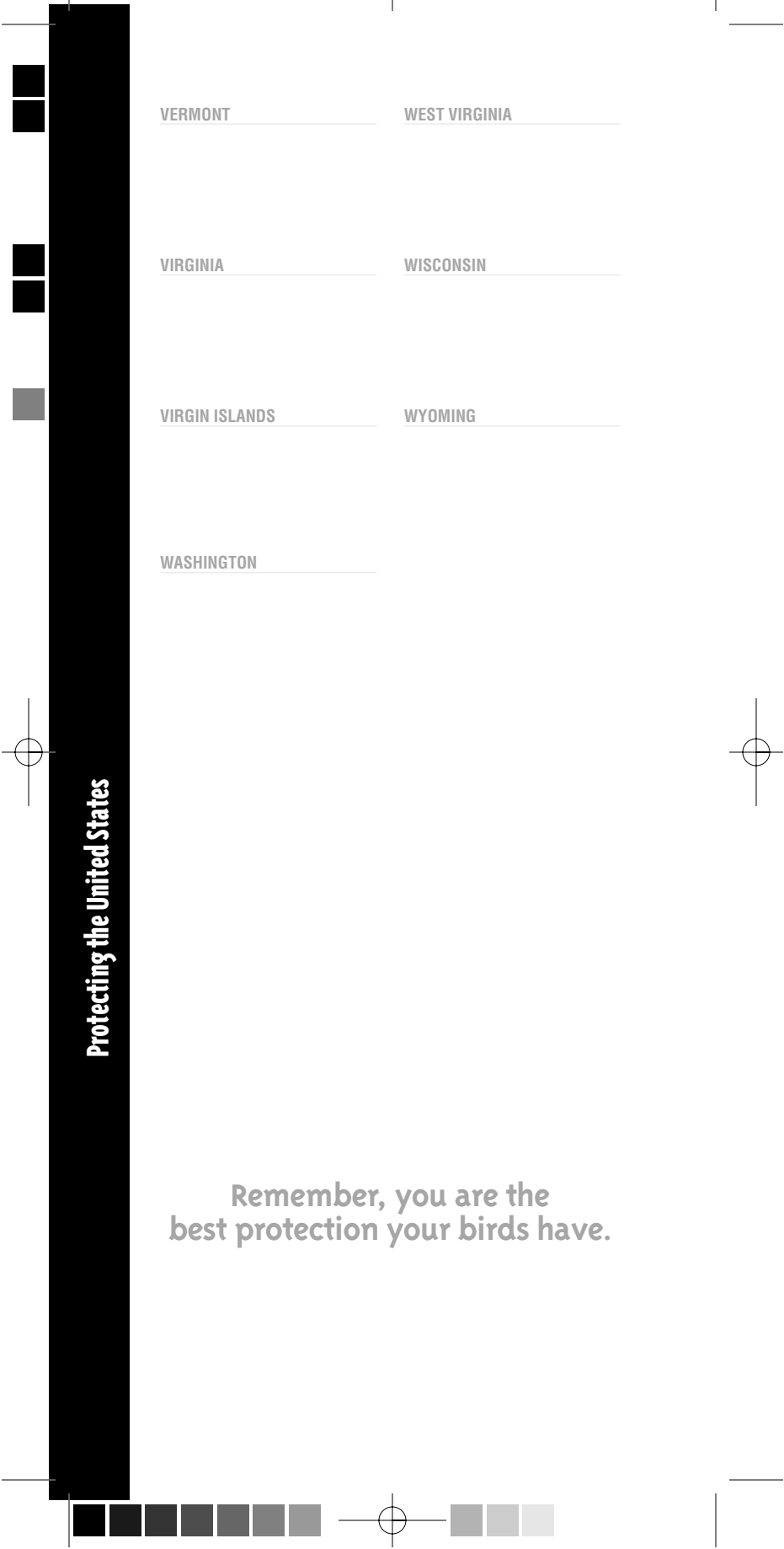
WISCONSIN

## WYOMING

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